2:Newcomb E-4, 5 (1951-1952) 1956
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taken together, is always as extensive, if not more so, than all the corn fields and kitchen gardens of an Indian family."[17] Luckenbach, a Moravian missionary of the early nineteenth century, said that the fields were "limited to two or three acres of corn for each family."[18] The Delawares today term the gardens "squaw patches" and claim that they never exceeded five acres in size (M.B., O.A.).

Most Delaware archaeological sites are in creek or valley bottoms;[19] in the eighteenth century such bottom land was chosen for gardens, since it was easily worked and was generally fertile.[20] Zeisberger, in the eighteenth century, took pains to point out that land away from rivers, although suitable for tillage by Europeans, was not utilized at all for this purpose by Indians.[21] Garden plots were cleared by bruising or removing the bark of the trees, then burning the trees after they were dry.[22] The seventeenth-century Swedish writers stated that garden plots were moved after the soil was exhausted.[23] Van der Donck in the middle of the century and Loskiel in the next century denied the use of fertilizer.[24] New England Indians, however, fertilized the land with fish, and Wallace has suggested that this trait may have been present among the Delawares.[25]

Corn was planted in ". . . square hills (so far apart) that one can conveniently walk between the hills. . . . And in each hill 6 or 7 grains are set."[26] According to De Rasieres:

> They make heaps like molehills, each about two and a half feet from the others, which they sow or plant in April with maize, in each heap five or six grains; in the middle of May, when the maize is the height of a finger or more, they plant in each heap three or four Turkish beans .... It [corn] is a grain to which much labor must be given, with weeding and earthing-up, or it does not thrive; and to this the women must attend very closely.[27]

Squash, pumpkins, several varieties of beans, and tobacco were also grown.[28] According to M.B. tobacco was grown only by women past the menopause. The Delawares blended their tobacco with sumac, one third sumac to two thirds tobacco.[29]

Hunting.—Hunting was important to the Delaware economy, not only because it provided food, but also because pelts and hides provided most of the material for clothing. The main objects of the hunt were deer and bear, but virtually all of the other mammals of their habitat were hunted and utilized for clothing or for food. This list included fox, raccoon, skunk, porcupine, opossum, and squirrel.[30] The Delawares

[17] Kalm, 1937, I: 307.
[18] Luckenbach, 1936, pp. 598-99.
[19] Personal communication from John Witthoft.
[20] Zeisberger, 1910, p. 44.
[21] *Ibid.*, p. 36.
[22] Johnson, 1917, p. 279; Kalm, 1937, I: 330; Harrington, 1913, p. 221.
[23] Johnson, 1917, p. 279.
[24] Loskiel, 1794, p. 66.
[25] Flannery, 1939, p. 10; Wallace, 1947, p. 18.
[26] Lindestrom, 1925, p. 179.
[27] De Rasieres, 1909, p. 107; Johnson, 1917, p. 279; and Harrington, 1913, p. 221, contain similar accounts of their horticulture.
[28] Just, 1909, p. 21; Johnson, 1917, p. 279; Kalm, 1937, I: 74; Lindestrom, 1925, pp. 180-81; Holm, 1834, p. 122.
[29] Speck, 1943, p. 324.
[30] Denton, 1845, p. 7; Van der Donck, 1908, p. 303; Zeisberger, 1910, pp. 37, 62-63.

241 used grooved axes hafted by tying the head between the ends of a split stick (Kalm, p. 229). The trees were then removed by burning (Johnson, p. 279; Harrington, 1913, p. 221; Kalm, p. 230). Zeisberger was told by his Indian acquaintances that, before they had metal tools, they also burned their wood into suitable lengths for use (Zeisberger, 1910, p. 29). After being cleared of rubbish and stones, the land was broken up with a hoe made of stone, tortoise shell, or the shoulder blade of a deer, attached to a short handle (Johnson, p. 279; Skinner, 1909, p. 42; Abbott, 1875, pp. 350 and 356; Loskiel, p. 67; Beaver, p. 47). The earth was piled into little hills in which five or six grains of maize were planted about April. In the middle of May when the maize was the "height of a finger", they planted in each heap three or four "Turkish beans,"4 which then grew up with and were supported by the maize. Maize was a plant that needed frequent weeding and hoeing (De Rasieres, p. 107; Johnson, p. 279; Harrington, 1913, p. 221).

242 There is no mention of the use of any kind of fertilizer by the Delaware, and early Swedish writers note that, "When a tract had been cultivated until crops would no longer grow, it was deserted and a new plantation prepared" (Johnson, p. 279). Therefore, in the present case there appears to be at least presumptive evidence for lack of fertilizing techniques.

232 262 In addition to the above-mentioned means of obtaining food, the Delaware Indians gathered various wild berries, nuts, fruits, and roots. Although many of the early references tend to be generic, one gathers that strawberries, gooseberries, huckleberries or billberries, cranberries and grapes were among the chief fruits used (Loskiel, pp. 68-69; Kalm, p. 261; Skinner, 1909, p. 43; Waugh, pp. 127-28), and the butternut, walnut, chestnut and hickory the most important nuts (Loskiel, pp. 70-71; Lindstrom, p. 223; Waugh, p. 123). In addition, Kalm found that early Swedish residents of New Jersey remembered the Indians having used Hopniss or ground nut (Glycine apios), Katnins (Sagittaria sagittifolia) and Taw-Ho (Arum virginicum).5 This last was reputed to be poisonous in a raw state and so was placed in a hole covered with earth where it was cooked by a fire burning on top. They also boiled and ate the seeds of the Golden Club or Taw-Hoe (Orontium aquaticum) (Kalm, pp. 260-61). The use of roots is referred to by other authors although the terms used vary (Brinton, 1885, p. 50; Johnson, p. 281; Lindstrom, p. 223; Skinner, 1909, p. 43).

252 Although there are no specific references to the making of maple syrup in early sources, all the later observers found maple sugar boiling an important activity and the properties of the maple were generally known and utilized on the east coast. It seems impossible that all the early writers would have overlooked the use of maple sap if it had been as important as it later became, but none of my sources mention it.